**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 70.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Pursell, Gary
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-003540
**Date Inspected:** 19-Aug-2008

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** Japan Steel Works

**OSM Arrival Time:** 800
**OSM Departure Time:** 1630
**Location:** Muroran, Japan

**CWI Name:** Chung Fu-Kuan

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|---|---|---|---|---|---|---|---|---|
| **Inspected CWI report:** | ☐ Yes | ☑ No | ☐ N/A | **CWI Present:** | ☑ Yes | ☐ No | |
| **Electrode to specification:** | ☑ Yes | ☐ No | ☐ N/A | **Rod Oven in Use:** | ☐ Yes | ☐ No | ☑ N/A |
| **Qualified Welders:** | ☑ Yes | ☐ No | ☐ N/A | **Weld Procedures Followed:** | ☑ Yes | ☐ No | ☐ N/A |
| **Approved Drawings:** | ☑ Yes | ☐ No | ☐ N/A | **Verified Joint Fit-up:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Approved WPS:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Delayed / Cancelled:** | ☐ Yes | ☑ No | ☐ N/A |

**Bridge No:** 34-0006
**Component:** Tower, Deviation and Jacking Saddles

**Summary of Items Observed:**

On this date OSM Quality Assurance (QA) Representative Daniel L. Reyes was present during the welding of the structural steel components for the West Deviation and the Tower Saddles relative to this project. The following was observed:

Foundry Shop

At the start of the shift the QA inspector periodically observed The Nikko Inspection Services (NIS) QC/NDT technicians Yugo Osanai and Mitschiro Kanno perform the Magnetic Particle Testing (MPT) on the casting identified as Tower Saddle T1-1. The MPT was performed in accordance with ASTM standard E709, using the yoke method. The AC Yokes utilized were manufactured by Denshijiji Industry Co., Ltd. and identified with the following information, model number UM 3BF, serial numbers 93-01 and 93-03. The yoke dead lift was verified with a 4.65kg test plate and the yoke light output was verified with a Hioki model 3408 light meter to be 2050Lx and 1450Lx and the magnetic field was also verified utilizing a field indicating gauge (pie gauge). The wet visible magnetic particles with a concentration of 2.2mL per 100mL were utilized during the testing and the calibrations of the MPT testing equipment appeared to meet the minimum requirements of ASTM E709. The testing was evaluated in accordance with the contract special provisions. The testing was not completed on this date and the work appears to meet the minimum requirements of the contract specifications.

Fabrication Shop # 4

The QA inspector traveled to the Fabrication Shop # 4 to observe the continued Partial Joint Penetration (PJP) groove welding of the structural steel plate components for the West Deviation Saddle identified as W2E2. The Welding Procedure Specification (WPS) SJ-3011-2 and the Distortion Control Plan, identified as Document

SJ-3109 Revision 3 was utilized by the Japan Steel Works, Ltd. (JSW) personnel during the production welding of the rib plate to base plate connection identified as EY2-4L-1 and EY2-4L-2. The WPS and the Distortion Control Plan were also used as a reference during QC verification of the welding parameters and the monitoring of the weld sequence. The production welding sequence was performed as per Attachment 5, Case 2 Step 3 and Attachment 6, Step 4 of the Distortion Control Plan. The welding was performed in the Flat (1G) Position with the work in the horizontal plane and the weld metal deposited from above.

The gas shielded Flux Cored Arc Welding (FCAW-G) was performed by JSW welding personnel Mamoru Kubota ID 74-3666 and Masatugu Kabayashi ID 08-5154. The consumable utilized by the welding personnel appeared to be a Hobart Brothers Product and the trade name was identified as TM 95K2 which appeared to comply with the AWS Specification A5.29 and the AWS Classification E90T5-K2C H4. The size of the electrode was 1.6 mm in diameter.

The Quality Control (QC) inspection was performed by Intertek Testing Services (ITS) personnel Chung Fu-Kuan and verified the preheat temperatures, welding parameters and performed the in process weld inspection during this shift. The welding parameters were verified utilizing a Hioki 3109 Clamp Meter, Model RMS and the surfaces temperatures were verified utilizing an Anritsu HA 100E digital surface thermometer during the QC verification. The calibration dates of the measuring instruments utilized by the QC inspector were previously verified by this QA inspector.

Later in the shift this QA inspector observed, at random intervals, the QC inspector performing QC verification of the welding parameters, the minimum preheat and maximum interpass temperatures.

The QA inspector's observations were performed at random intervals during the shift. The QA inspector noted that it appeared the approved and latest revised WPS's were posted at the welding station and that each approved welder was entered in the latest revised Welding Personnel Log issued by Japan Steel Works, Ltd. The welding parameters, preheat and interpass temperatures were verified by the QA inspector utilizing a Fluke 337 clamp meter for the electrical welding parameters and Tempilstik temperature indicators for the surface temperatures. The filler metal utilized by the JSW welding personnel was also verified. The QC inspector ITS personnel, Mukhmud Ashadi appeared to perform the visual weld examinations, monitoring of the welding and the verification of the welding parameters in accordance with the contract documents.

Dimensional Check

Later in the shift the QA inspector observed the Japan Steel Works, Ltd. (JSW) personnel, Koyanagi Kiyotaka who was assisted by Ohta Yoshihiro, performing a dimensional check of the West Deviation Saddle identified as W2E1. The dimensional check was performed to determine the amount that would be required to be removed from the ribs by machining prior to the installation of the casting on the grillage. This task was not completed during this shift on this date.

See Weld Joints in Progress Inspected on Page 3 of this report regarding the QA observations of the production welding parameters recorded during this shift on this date.

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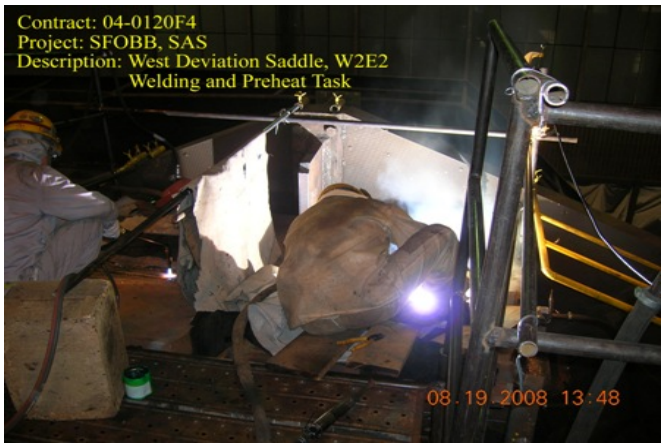
*( Continued Page 3 of 4 )*

The digital photographs below illustrates the observations of the activities performed on this date.







| Item | Weld Identification | Applicable WPS | CWI Name | Amperage | Voltage | TravelSpeed | Preheat Temp | Remarks |
|---|---|---|---|---|---|---|---|---|
| 1 | E2Y-4L-2 | SJ-3011-2 | C. Fu-Kuan | 337 DC | 34.5 DC | 290 mm/m | 200 Degrees C. | M. Kobayashi |
| 2 | E2Y-4L-1 | SJ-3011-2 | C. Fu-Kuan | 340 DC | 35 DC | 295 mm/m | 200 Degrees C. | Kubota |

**Summary of Conversations:**

There were no pertinent conversations relative to the project on this date.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Venkatesh Iyer, (858) 967-6363, who represents the Office of Structural Materials for your project.

# WELDING INSPECTION REPORT

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|---|---|---|
| **Inspected By:** | Reyes,Danny | Quality Assurance Inspector |
| **Reviewed By:** | Lanz,Joe | QA Reviewer |